CS455 Computer Security -- Bryan Higgs

Spring 2006

Syllabus

Office Hours: M, T, W, 2pm – 5pm
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Brief Course Description:
This course is an introduction to the methods, algorithms, and tools of computer system security. Topics include both the theoretical and practical aspects of security including cryptography, protocols, and system design. Security standards will also be covered as well as security engineering examples. An important part of the course will be a survey of actual techniques used by hackers to attack systems.

Required Text:
Network Security: Private Communication in a Public World
by Charlie Kaufman, Radia Perlman, Mike Speciner, 2nd edition

Course Objectives:
To familiarize each student with the theory, concepts, history, and practical aspects of security in computer systems.

Classroom Policies:
Students are expected to attend and participate in all classes. Attendance is taken at the beginning of each class. Notice to the instructor in advance of any anticipated absence is expected whenever possible. It is the student's responsibility to make up any material missed as a result of any absence.

Course Requirements and Grading Policies:
Students will be evaluated based on a number of non-trivial assignments, a team project, and a final examination. All tests/examinations are open book.
Assignments: 90% Final: 10%
Undergraduates are evaluated to a more lenient standard compared with graduate students enrolled in the same class. This involves both the amount of work expected, and the quality of that work.

Teaching Strategies:
Lecture format, built around the textbook, the course web site, and other resources, with numerous examples chosen to illustrate the concepts. Questions and discussion are strongly encouraged.

Material Covered:

- Introduction
- Security Concepts
- History of Cryptography
- Sets, Permutations, Combinations & Probability
- Classical Cryptosystems
- Number Theory & Modular Arithmetic
- Symmetric Block Ciphers
- Public Key Cryptography
- Message Authentication Codes, Hashes, and Message Digests
- Authentication
- Standards & Products
- Web Security & Privacy for Users
- Malware
- Lessons Learned
**Americans with Disabilities Act (ADA)**

Rivier College wants to provide reasonable accommodations to students with disabilities. To accomplish this goal effectively and to ensure the best use of our resources, the College expects students to provide timely notice of a disability to the Office of Special Services for verification and for evaluation of available options. Any student whose disabilities fall within ADA should inform the instructor within the first two weeks of the term of any special needs or equipment necessary to accomplish the requirements for the course. To obtain current information on this procedure, contact the Office of Special Services at telephone extension 8497, or see Rivier’s website [www.rivier.edu](http://www.rivier.edu) display for Specialized Student Services.

**Academic Honesty**

Plagiarism and cheating are serious breaches of academic honesty. In general, plagiarism is defined as the presentation of someone else’s work in whatever form: copyrighted material, notes, film, art work, reports, statistics, bibliographies, and the like, as one’s own, and failing to acknowledge the true source. Quoting word-for-word, or almost so, or using the argumentation of another source without acknowledging this dependence also constitutes plagiarism. Cheating is defined as the giving or attempting to give or to receive unauthorized information or assistance during an examination or in completing an assigned project. Submission of a single work for two separate courses without the permission of the instructors involved is also a form of cheating.

If students are unsure whether a specific course of action would constitute plagiarism or cheating, they should consult with their instructor in advance.

Penalties for plagiarism and cheating vary with the degree of the offense and may take the form of the following academic sanctions:

- the grade of F for the work in question;
- the grade of F for the course;
- notification of the department chair and/or Academic Dean of the College of the misconduct of the student;
- recommendations that the student be suspended or dismissed from the College.

**Attendance**

Please note the *Statement on Attendance*, stated on page 27 in the Undergraduate Catalog, 2005-2007.